

Integrating Ethics and Career Futures with Technical Learning to Promote AI Literacy for Middle School Students: An Exploratory Study

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Abstract

The rapid expansion of artificial intelligence (AI) necessitates promoting AI education at the K-12 level. However, educating young learners to become AI literate citizens poses several challenges. The components of AI literacy are ill-defined and it is unclear to what extent middle school students can engage in learning about AI as a sociotechnical system with socio-political implications. In this paper we posit that students must learn three core domains of AI: technical concepts and processes, ethical and societal implications, and career futures in the AI era. This paper describes the design and implementation of the Developing AI Literacy (DAILy) workshop that aimed to integrate middle school students' learning of the three domains. We found that after the workshop, most students developed a general understanding of AI concepts and processes (e.g., supervised learning and logic systems). More importantly, they were able to identify bias, describe ways to mitigate bias in machine learning, and start to consider how AI may impact their future lives and careers. At exit, nearly half of the students explained AI as not just a technical subject, but one that has personal, career, and societal implications. Overall, this finding suggests that the approach of incorporating ethics and career futures into AI education is age appropriate and effective for developing AI literacy among middle school students. This study contributes to the field of AI Education by presenting a model of integrating ethics into the teaching of AI that is appropriate for middle school students.